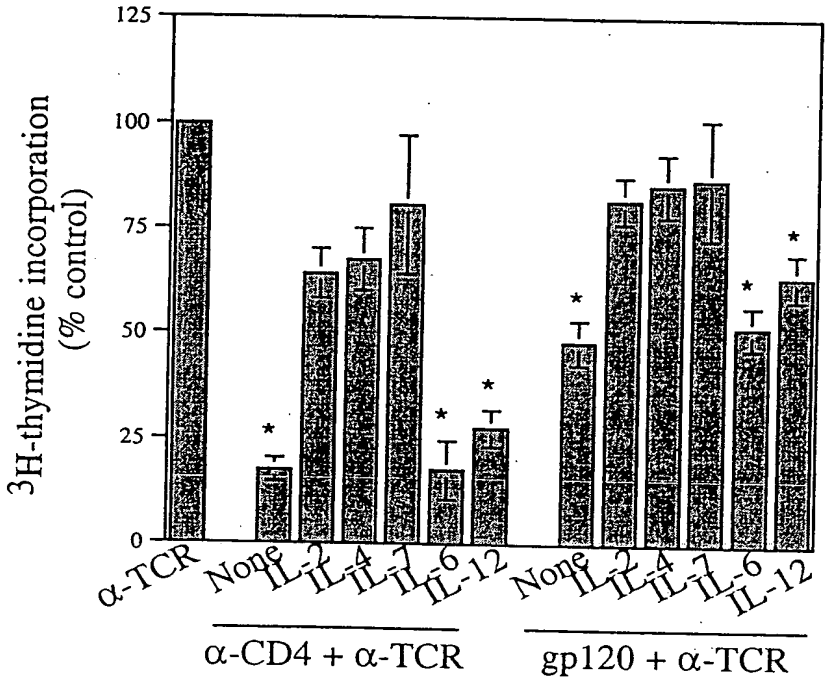

125
100
75
50
25
0
^{3}H-thymidine incorporation
(% control)
α-TCR
None
IL-2
IL-4
IL-7
IL-6
IL-12
None
IL-2
IL-4
IL-7
IL-6
IL-12
α-CD4 + α-TCR
gp120 + α-TCR

FIG. 1

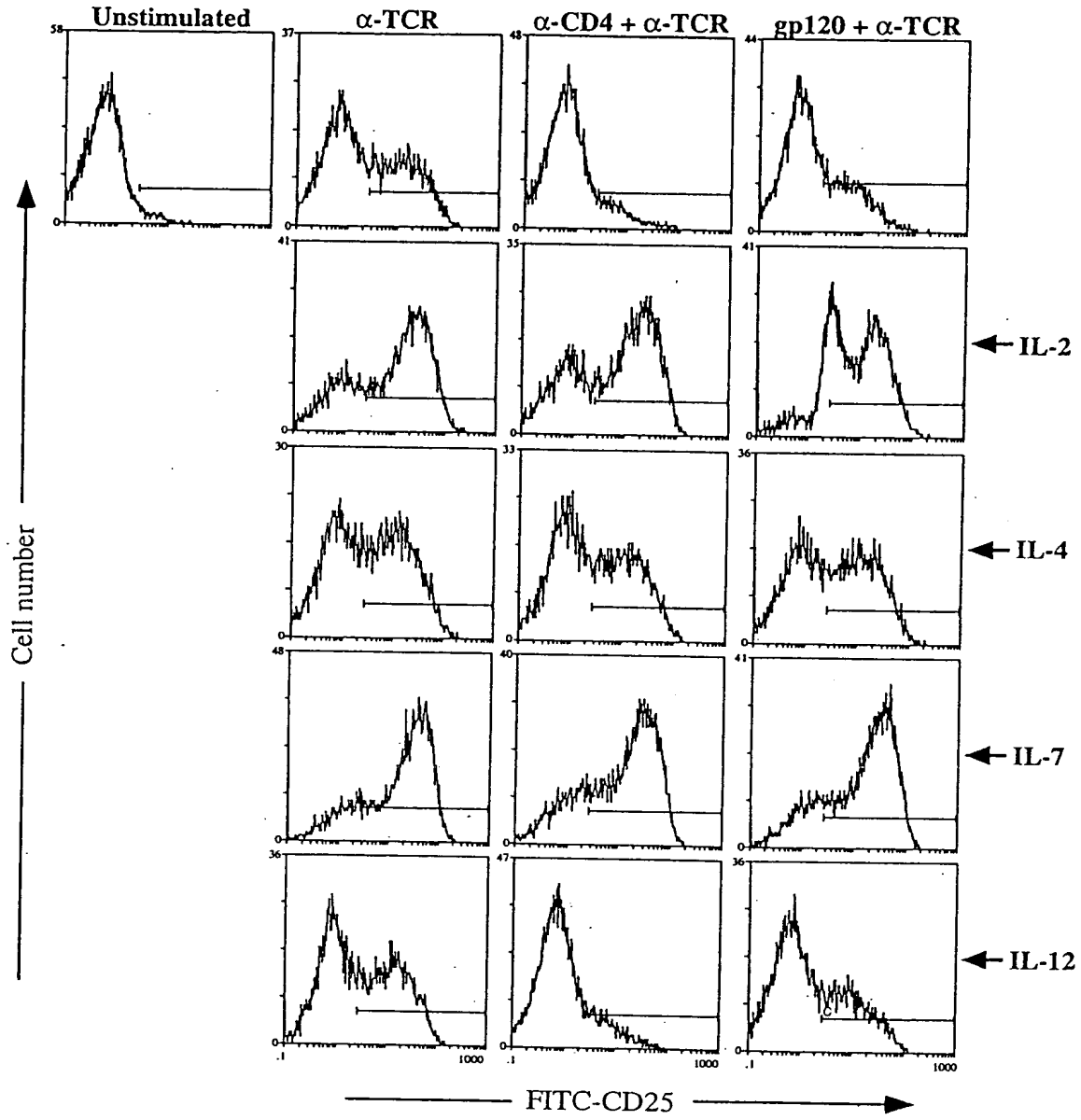

Unstimulated
α-TCR
α-CD4 + α-TCR
gp120 + α-TCR
IL-2
IL-4
IL-7
IL-12
Cell number
FITC-CD25

FIG. 2A

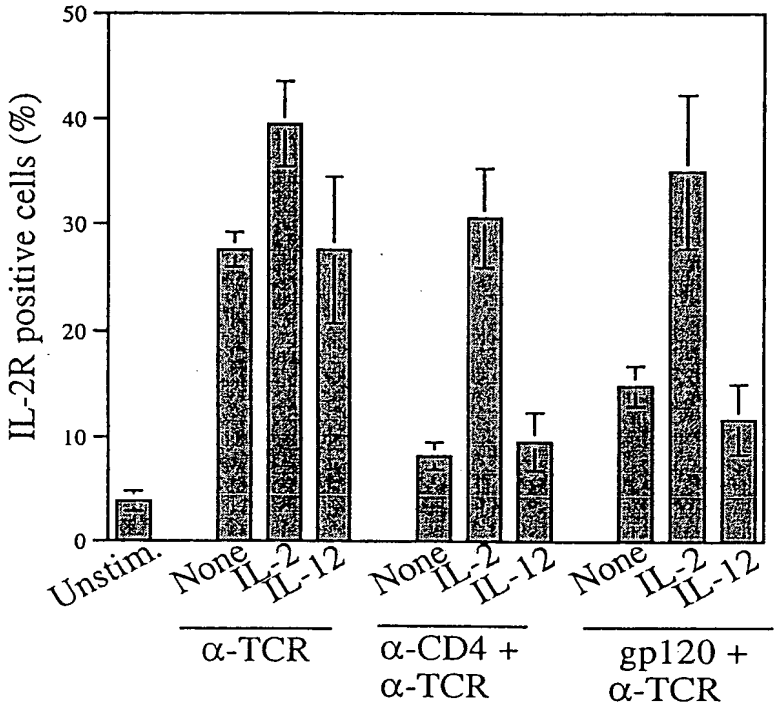

IL-2R positive cells (%)
50
40
30
20
10
0
Unstim.
None
IL-2
IL-12
None
IL-2
IL-12
None
IL-2
IL-12
α-TCR
α-CD4 +
α-TCR
gp120 +
α-TCR

FIG. 2B

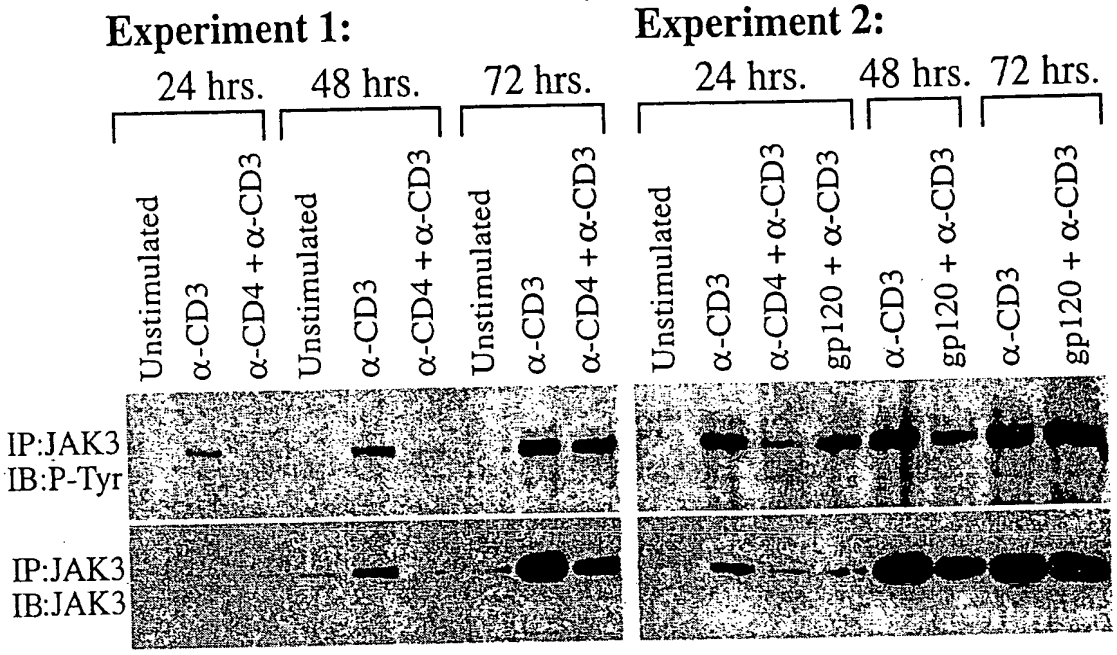

Experiment 1:
Experiment 2:
24 hrs.
48 hrs.
72 hrs.
24 hrs.
48 hrs.
72 hrs.
Unstimulated
α-CD3
α-CD4 + α-CD3
gp120 + α-CD3
IP:JAK3
IB:P-Tyr
IP:JAK3
IB:JAK3

FIG. 3A

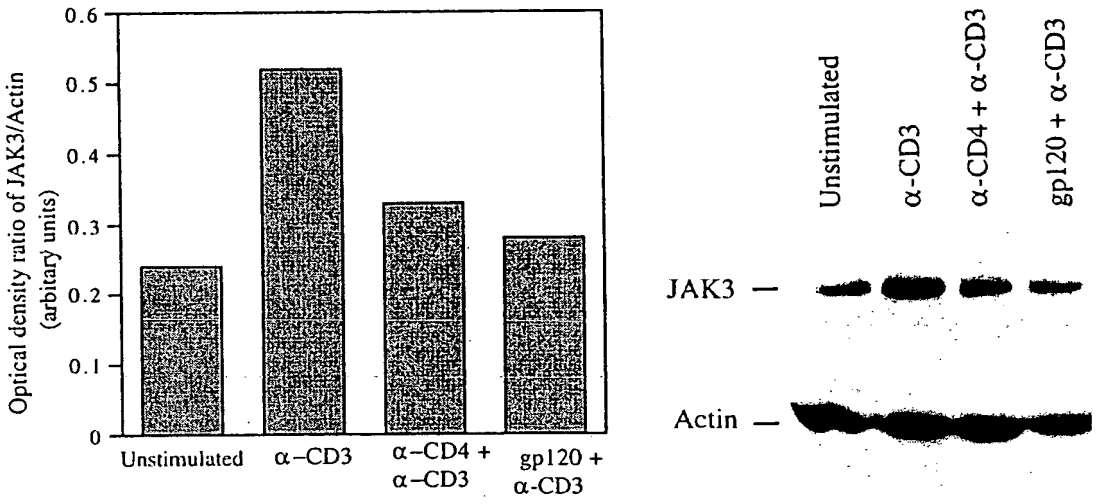

Optical density ratio of JAK3/Actin
(arbitary units)
0.6
0.5
0.4
0.3
0.2
0.1
0
Unstimulated
α–CD3
α–CD4 +
α–CD3
gp120 +
α-CD3
Unstimulated
α-CD3
α-CD4 + α-CD3
gp120 + α-CD3
JAK3
Actin

FIG. 3B

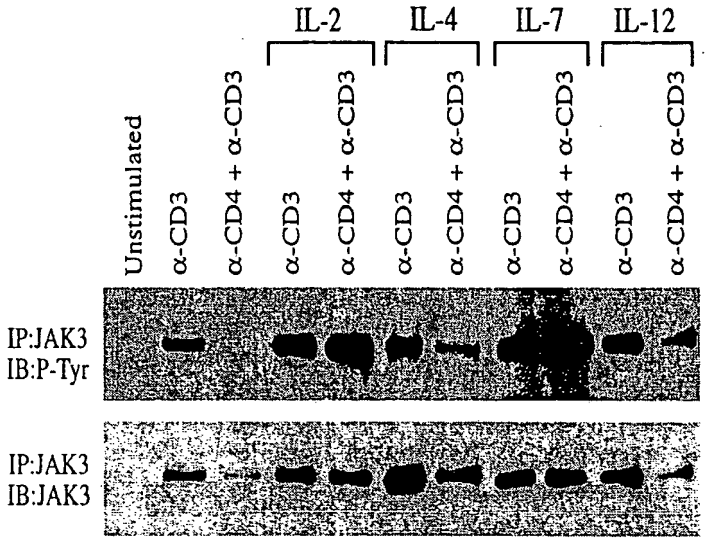

IL-2
IL-4
IL-7
IL-12
Unstimulated
α-CD3
α-CD4 + α-CD3
α-CD3
α-CD4 + α-CD3
α-CD3
α-CD4 + α-CD3
α-CD3
α-CD4 + α-CD3
α-CD3
α-CD4 + α-CD3
IP:JAK3
IB:P-Tyr
IP:JAK3
IB:JAK3

FIG. 4

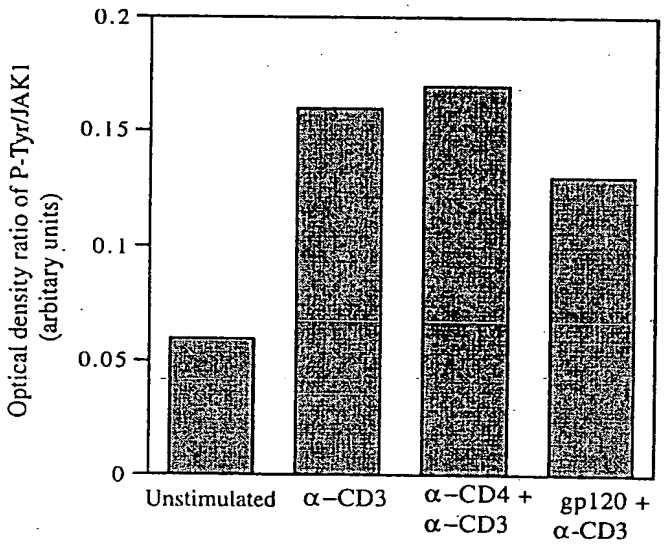

Optical density ratio of P-Tyr/JAK1
(arbitary units)
0.2
0.15
0.1
0.05
0
Unstimulated
α–CD3
α–CD4 +
α–CD3
gp120 +
α-CD3

FIG. 5A

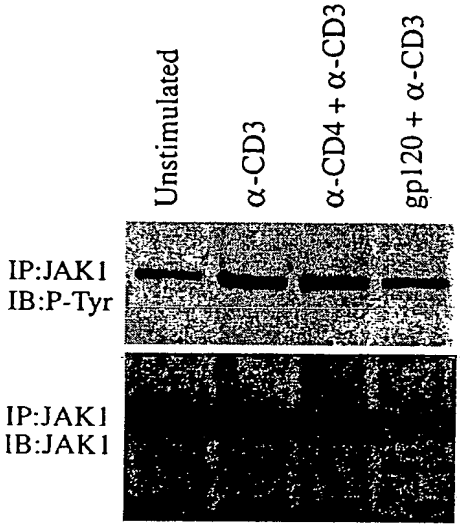

Unstimulated
α-CD3
α-CD4 + α-CD3
gp120 + α-CD3
IP:JAK1
IB:P-Tyr
IP:JAK1
IB:JAK1

FIG. 5B

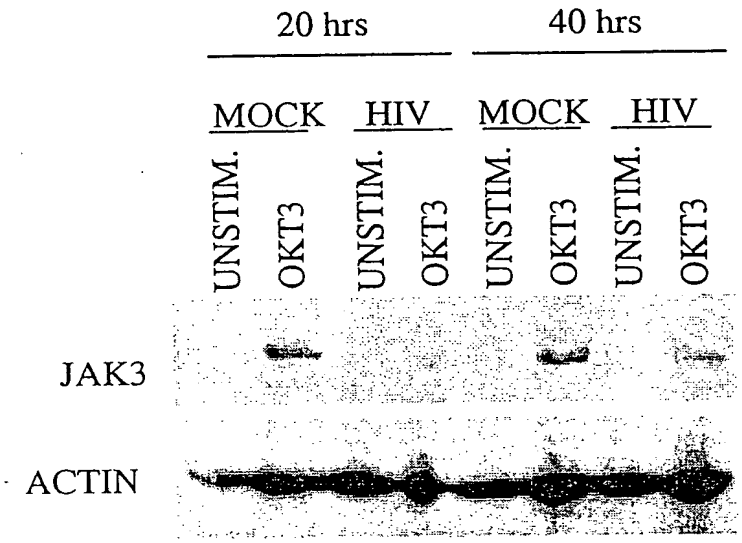

20 hrs
40 hrs
MOCK
HIV
MOCK
HIV
UNSTIM.
OKT3
UNSTIM.
OKT3
UNSTIM.
OKT3
UNSTIM.
OKT3
JAK3
ACTIN

FIG. 6A

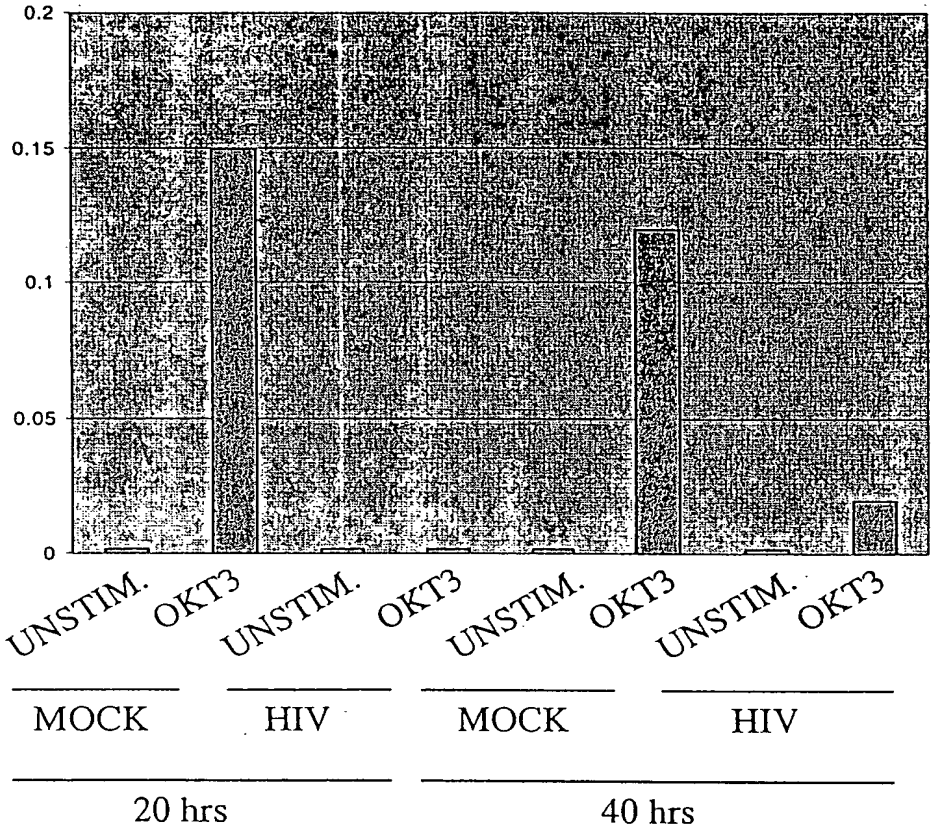

0.2
0.15
0.1
0.05
0
UNSTIM.
OKT3
UNSTIM.
OKT3
UNSTIM.
OKT3
UNSTIM.
OKT3
MOCK
HIV
MOCK
HIV
20 hrs
40 hrs

FIG. 6B

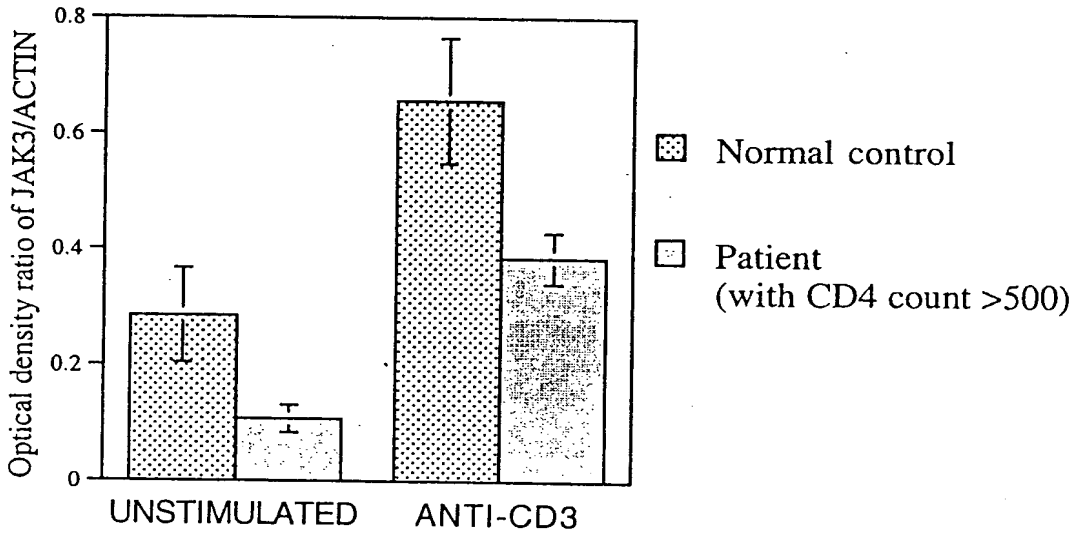

Optical density ratio of JAK3/ACTIN
0.8
0.6
0.4
0.2
0
UNSTIMULATED
ANTI-CD3
Normal control
Patient
(with CD4 count >500)

FIG. 7

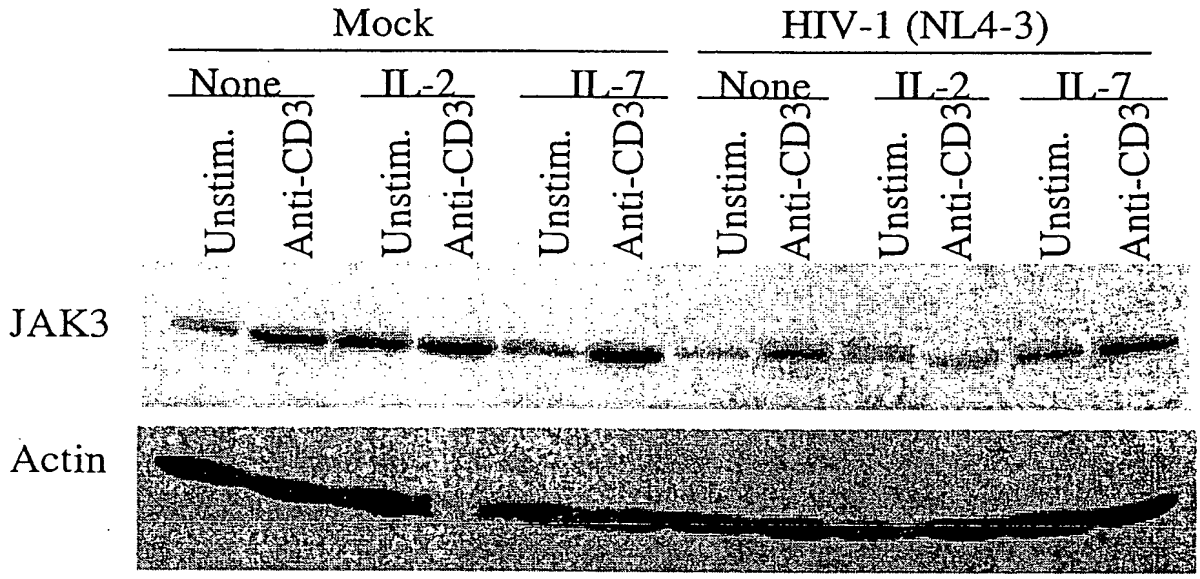

Mock
HIV-1 (NL4-3)
None
IL-2
IL-7
None
IL-2
IL-7
Unstim.
Anti-CD3
Unstim.
Anti-CD3
Unstim.
Anti-CD3
Unstim.
Anti-CD3
Unstim.
Anti-CD3
Unstim.
Anti-CD3
JAK3
Actin

FIG. 8A

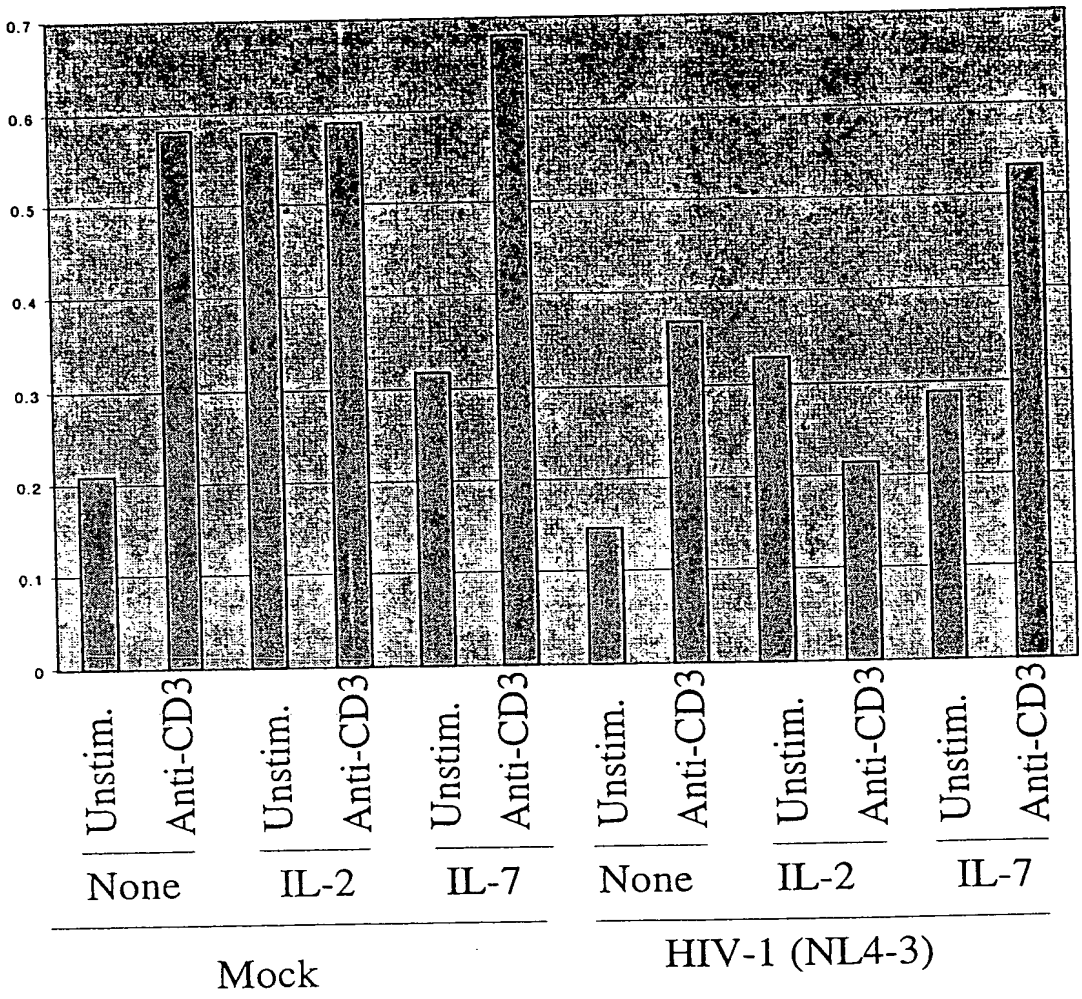

0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Unstim.
Anti-CD3
Unstim.
Anti-CD3
Unstim.
Anti-CD3
Unstim.
Anti-CD3
Unstim.
Anti-CD3
Unstim.
Anti-CD3
None
IL-2
IL-7
None
IL-2
IL-7
Mock
HIV-1 (NL4-3)

FIG. 8B

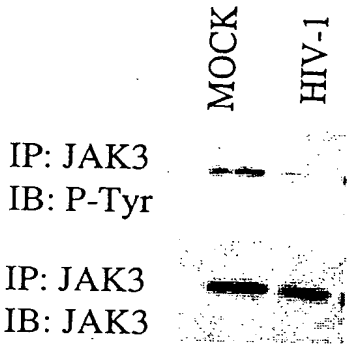


FIG. 9A

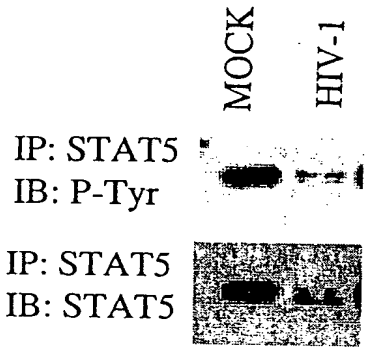


FIG. 9B

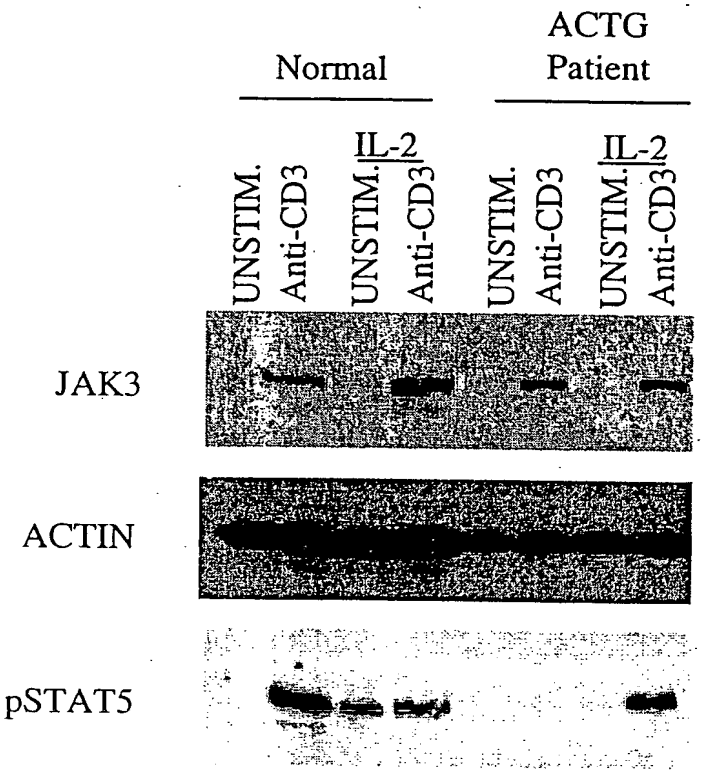

Normal
ACTG Patient
UNSTIM.
Anti-CD3
IL-2
UNSTIM.
Anti-CD3
UNSTIM.
Anti-CD3
IL-2
UNSTIM.
Anti-CD3
JAK3
ACTIN
pSTAT5

FIG. 10

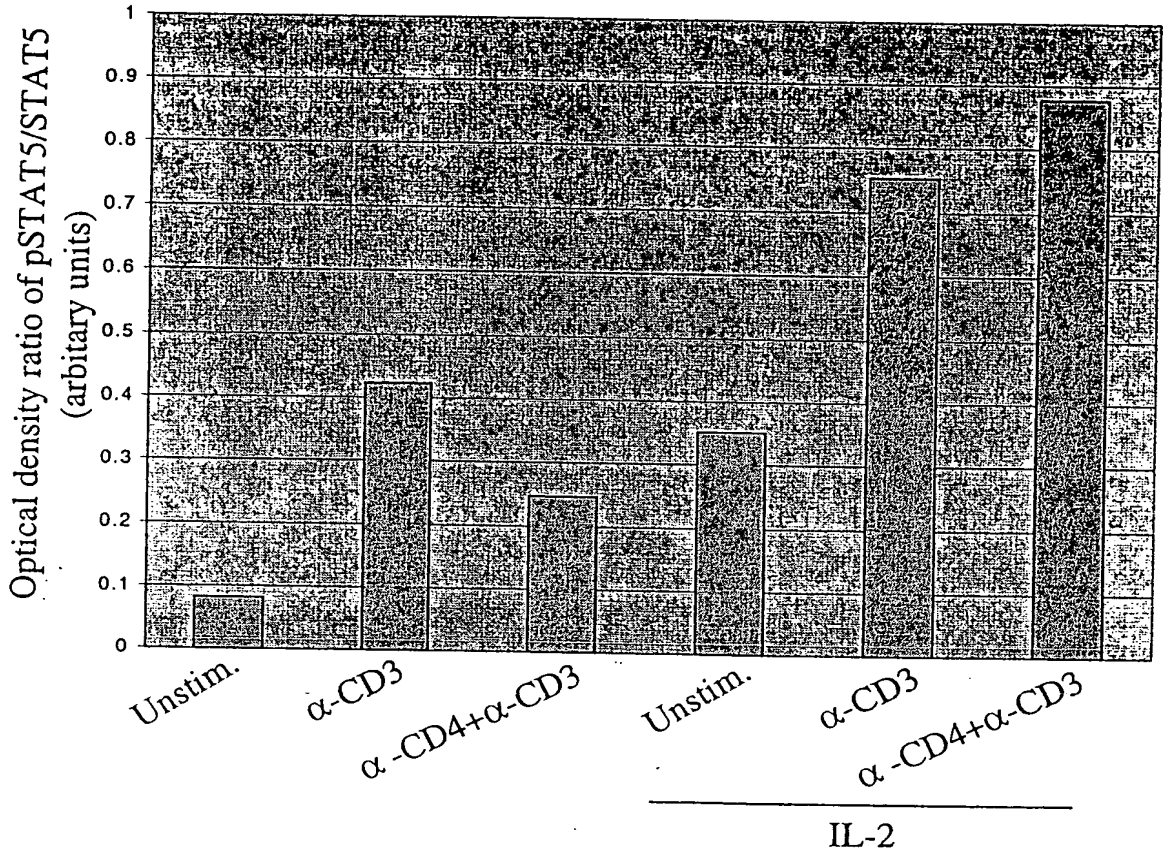

Optical density ratio of pSTAT5/STAT5
(arbitary units)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Unstim.
α-CD3
α-CD4+α-CD3
Unstim.
α-CD3
α-CD4+α-CD3
IL-2

FIG. 11A

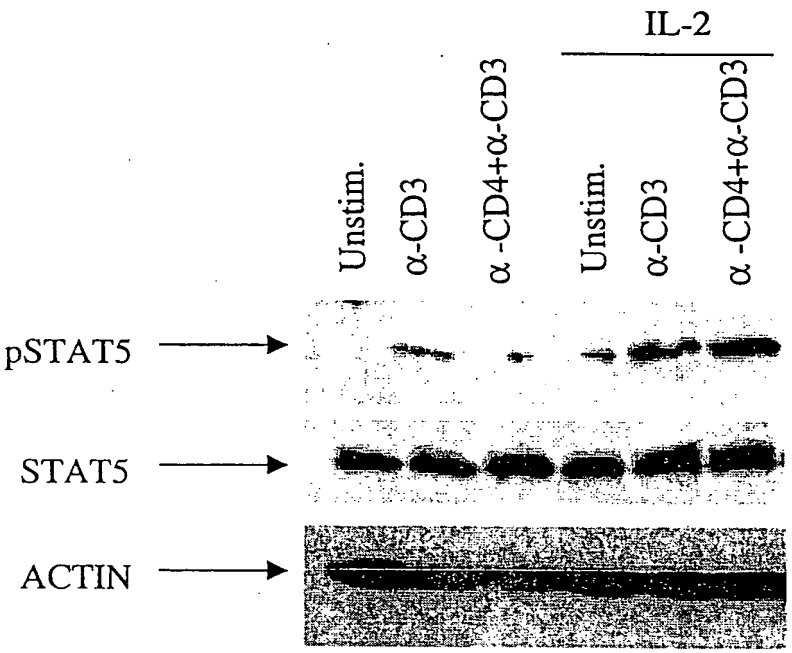

IL-2
Unstim.
α-CD3
α -CD4+α-CD3
Unstim.
α-CD3
α -CD4+α-CD3
pSTAT5
STAT5
ACTIN

FIG. 11B

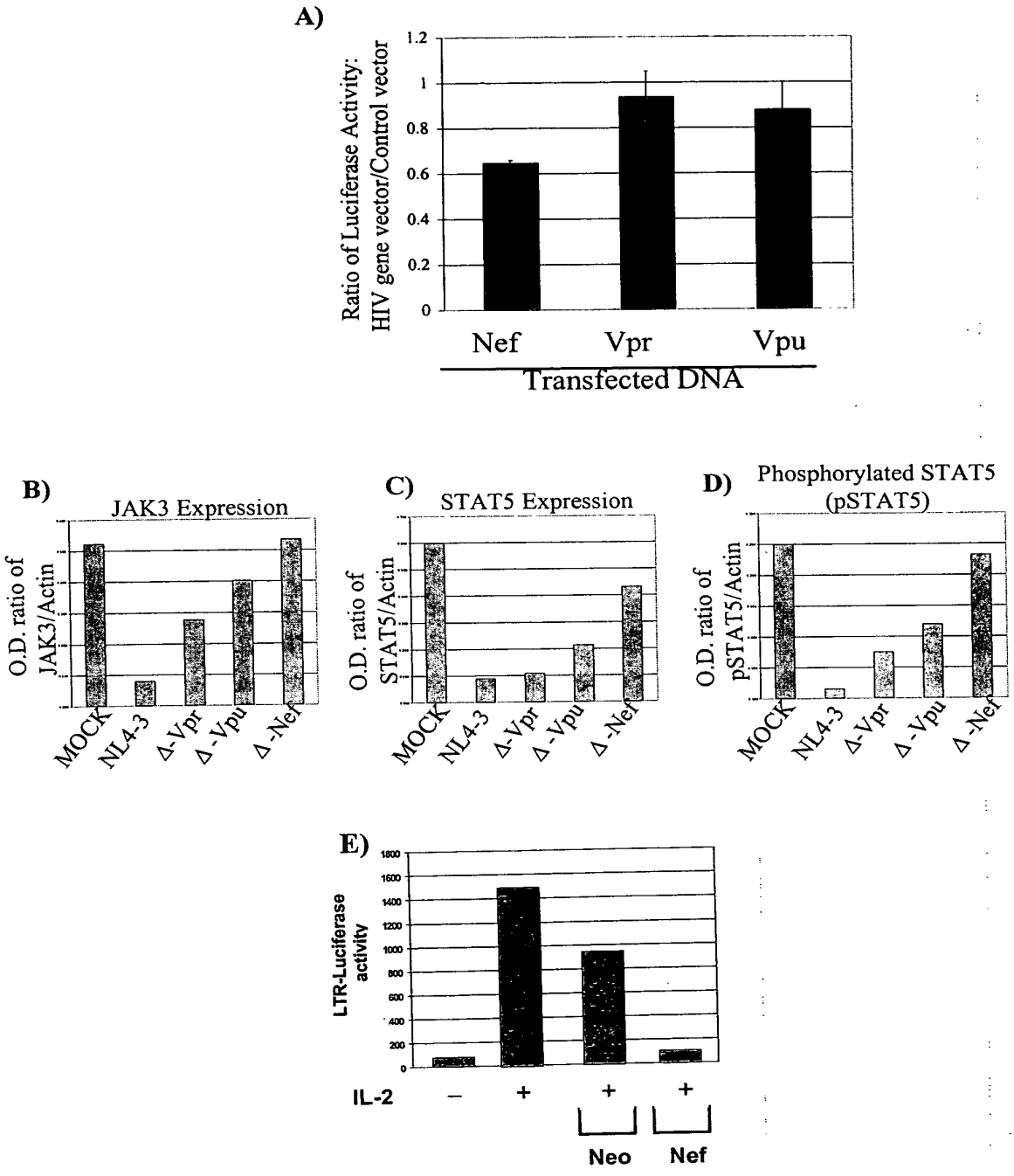

A)
Ratio of Luciferase Activity:
HIV gene vector/Control vector
1.2
1
0.8
0.6
0.4
0.2
0
Nef
Vpr
Vpu
Transfected DNA
B)
JAK3 Expression
O.D. ratio of
JAK3/Actin
MOCK
NL4-3
Δ-Vpr
Δ-Vpu
Δ-Nef
C)
STAT5 Expression
O.D. ratio of
STAT5/Actin
MOCK
NL4-3
Δ-Vpr
Δ-Vpu
Δ-Nef
D)
Phosphorylated STAT5
(pSTAT5)
O.D. ratio of
pSTAT5/Actin
MOCK
NL4-3
Δ-Vpr
Δ-Vpu
Δ-Nef
E)
LTR-Luciferase
activity
1800
1600
1400
1200
1000
800
600
400
200
0
IL-2
–
+
+
+
Neo
Nef

Figure 12

CCTTTAAGACCAATGACTTACAAGGCAGCTGTAGATCTTAGCCACTTTTTAAAAG
AAAGGGGGGACTGGAAGGGCTAATTCACTCCCAAAGAAGACAAGATATCCTTG

(S1)

ATCTGTGGATCTACCACACACAAGGCTAC**TTCCCTGAT**TAGCAGAACTACA
CACCAGGGCCAGGGGTCAGATATCCACTGACCTTTGGATGGTGCTACAAGCTAG
TACCAGTTGAGCCAGATAAGATAGAAGAGGCCAATAAAGGAGAGAACACCAGC
TTGTTACACCCTGTGAGCCTGCATGGGATGGATGACCCGGAGAGAGAAGTGTTA
GAGTGGAGGTTTGACAGCCGCCTAGCATTTCATCACGTGGCCCGAGAGCTGCAT

(S2)

CCGGAGTAC**TTCAAGAA**CTGCTGACATCGAGCTTGCTACAAGGGACTTTCC

(S3)

GCTGGGGACT**TTCCAGGG**AGGCGTGGCCTGGGCGGGACTGGGGAGTGGCG
AGCCCTCAGATCCTGCATATAAGCAGCTGCTTTTTGCCTGTACTGGGTCTCTCTG
GTTAGACCAGATCTGAGCCTGGGAGCTCTCTGGCTAACTAGGGAACCCACTGCT
TAAGCCTCAATAAAGCTTGCCTTGAGTGCTTC

Figure 13

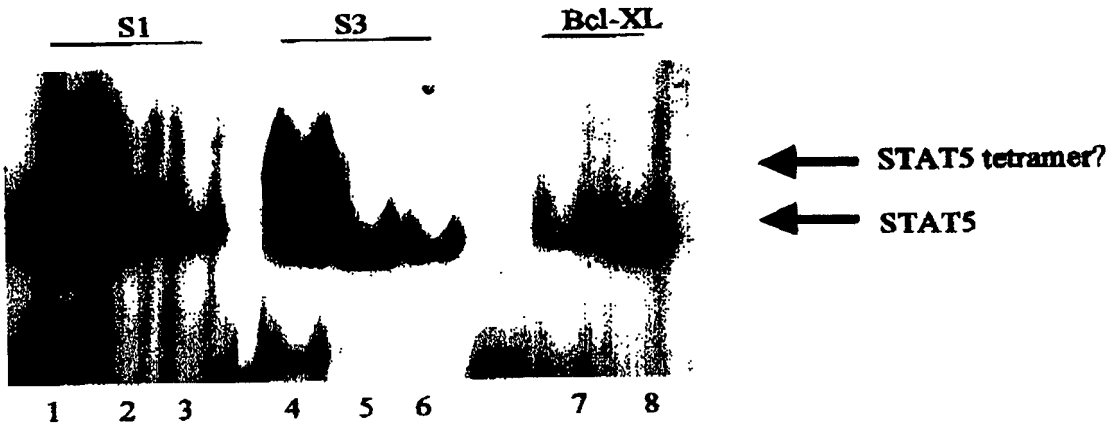


Figure 14

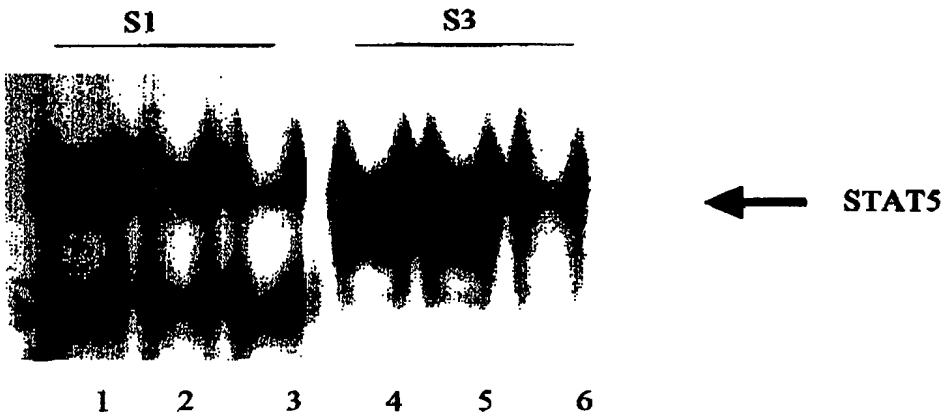


Figure 15

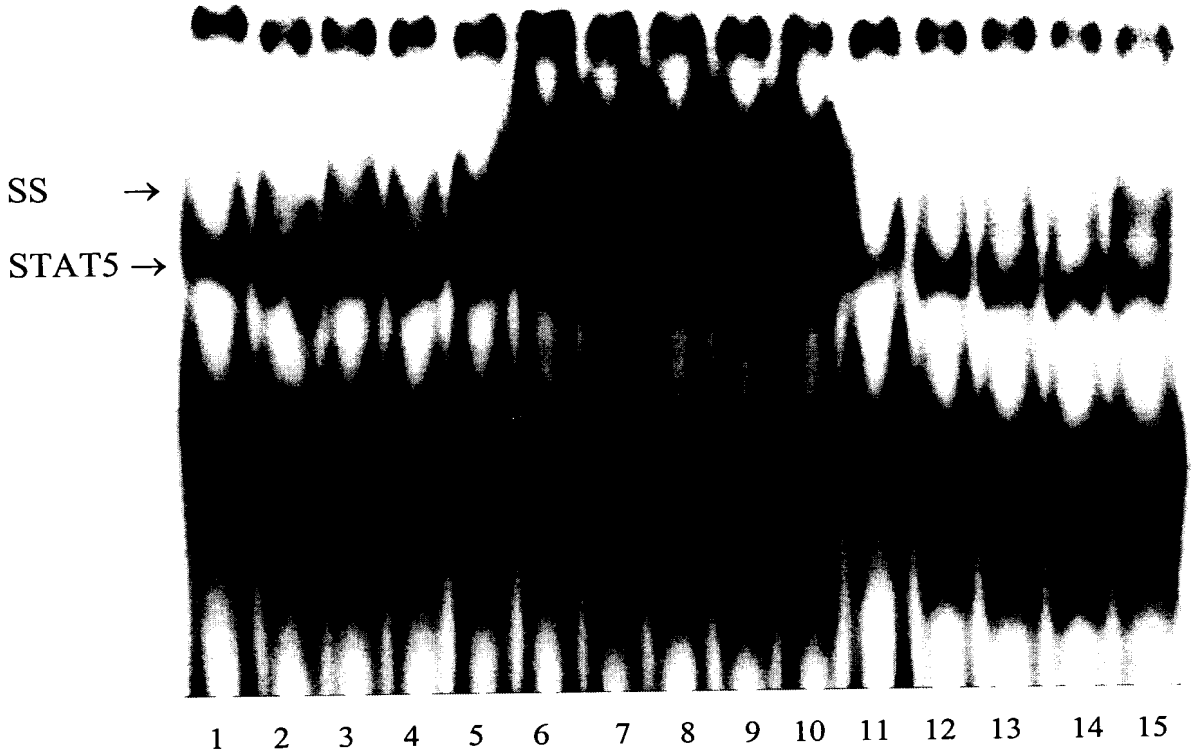


FIG. 16

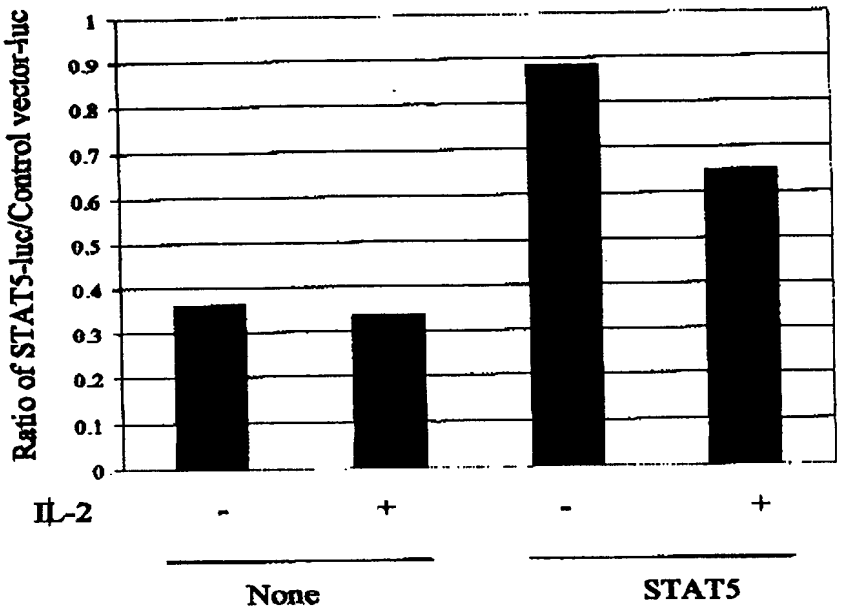
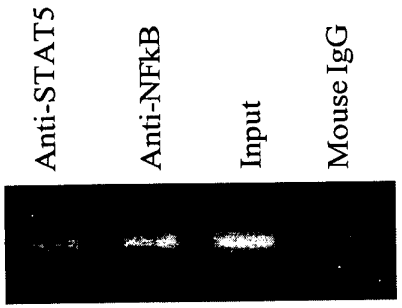

Ratio of STAT5-luc/Control vector-luc
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
IL-2
-
+
-
+
None
STAT5

Figure 17

A.


Anti-STAT5
Anti-NFkB
Input
Mouse IgG

B.

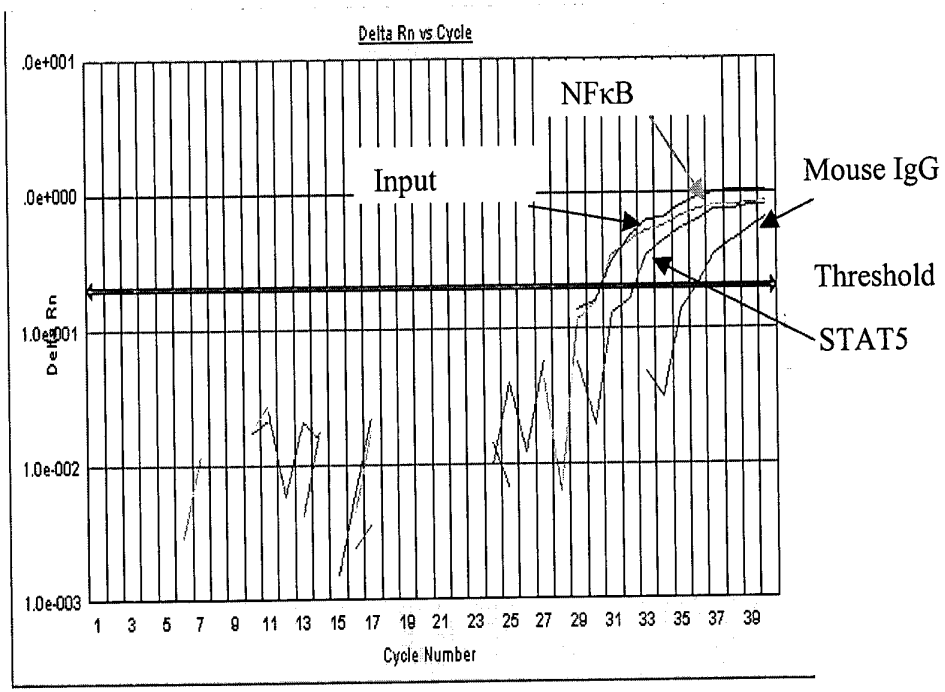

Delta Rn vs Cycle
.0e+001
.0e+000
1.0e-001
1.0e-002
1.0e-003
Delta Rn
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39
Cycle Number
NFκB
Input
Mouse IgG
Threshold
STAT5

Figure 18

A) Human T-lymphotropic virus 1 isolate ES02-JCP long terminal repeat, 5' partial sequence.

cagggcccag actagggctc tgacgtctcc ccccggaggg acagctcagc accggctcag 61
gctaggccct gacgtgtccc cctgaagaca aatcataagc tcagacctcc gggaagccac 121
cggaaccacc catttcctcc ccatgtttgt caagccgccc tcaggcgttg acgacaaccc 181
ctcacctcaa aaaactt **TTCATGGCA** cgca tatggctgaa taaactaaca ggagtctata 241
aaagcgtgga gacag **TTCAG GAG** ggggctc gcatctctcc ttcacgcgcc cgccgcccta 301
cctgaggccg ccatccacgc cggttgagtc gcgttctgcc gcctcccgcc tgtggtgcct 361
cctgaactgc gtccgccgtc taggtaagtt cagagctcag gtcgagaccg ggcctttgtc 421
cggcgctccc ttggagcctg cctagactca gccggctctc cacgctttgc ctgaccctgc 481
ttgctcaact ctgcgtcttt gtttcgtttt ctg **TTCTGCGCC** g ctacaga tcgaaagttc 541
cacccctttc cctttcattc acg

B) FIV genome
5' LTR = 1..355

1 tgggatgagt attggaaccc tgaagaaata gaaagaatgc ttatggacta gggactgttt 61
acgaacaaat gataaaagga aatagctgag catgactcat agttaaagcg ctagcagctg 121
cctaaccgca aaaccacatc ctatggaaag cttgctaatg acgtataagt tgttccattg 181
taagagtata taaccagtgc tttgtgaaac **TTCGAGGAG** t ctctttgttg aggacttttg 241
agttctccct tgaggctccc acagatacaa taaatatttg agattgaacc ctgtcgagta 301
tctgtgtaat ctttttttacc tgtgaggtct cggaatccgg gccgagaact tcgcagttgg

C) SIV genome
5' LTR = 1..688

tggatgggat atattactct gaaagaagag aaaagatcct gaatttgtat gccttgaacg 61
agtggggaat aatagatgat tggcaagctt actcaccagg cccggggata aggtacccga 121
gagtctttgg cttctgcttt aagctagtcc cagtggacct gcatgaggag gcacgcaact 181
gtgagagaca ctgtctgatg catccagcac agatgggggа agatcctgat ggaatagatc 241
atggagaagt cttggtctgg aagtttgacc cgaagttggc ggtggagtac cgcccggaca 301
tgtttaagga catgcacgaa catgcaaagc gctagtgtca gcactttgcg gttgggactt 361
tccgccaggg actttccaca gtgggtggat cggaggcggt acaggggcgg tactgggagt 421
ggctttcccc tcagagctgc ataaaagcag atgctcgctg gcttgtaact cagtctctta 481
ctaggagacc agctagagcc tgggtg **TTCGCTGGT** tagcc taacccggtt ggccaccggg 541
ggtaaggact ccttggcttc atatagctca ataaacctgc tcgcttagtc gctatattgg 601
agtcaagtgc tcattgctgc gccgagcctc tagaggtgaa cctctcttac tgggttctcc 661
tgtacccagg tgggagaaac tccagcagtg

Figure 19

A) STAT 5A

MAGWIQAQQLQGDALRQMQVLYGQHFPIEVRHYLAQWIESQPWDAIDLDNPQDRAQA
TQLLEGLVQELQKKAEHQVGEDGFLLKIKLGHYATQLQKTYDRCPLELVRCIRHILY
NEQRLVREANNCSSPAGILVDAMSQKHLQINQTFEELRLVTQDTENELKKLQQTQEY
FIIQYQESLRIQAQFAQLAQLSPQERLSRETALQQKQVSLEAWLQREAQTLQQYRVE
LAEKHQKTLQLLRKQQTIILDDELIQWKRRQQLAGNGGPPEGSLDVLQSWCEKLAEI
IWQNRQQIRRAEHLCQQLPIPGPVEEMLAEVNATITDIISALVTSTFIIEKQPPQVL
KTQTKFAATVRLLVGGKLNVHMNPPQVKATIISEQQAKSLLKNENTRNECSGEILNN
CCVMEYHQATGTLSAHFRNMSLKRIKRADRRGAESVTEEKFTVLFESQFSVGSNELV
FQVKTLSLPVVVIVHGSQDHNATATVLWDNAFAEPGRVPFAVPDKVLWPQLCEALNM
KFKAEVQSNRGLTKENLVFLAQKLFNNSSSHLEDYSGLSVSWSQFNRENLPGWNYTF
WQWFDGVMEVLKKHHKPHWNDGAILGFVNKQQAHDLLINKPDGTFLLRFSDSEIGGI
TIAWKFDSPERNLWNLKPFTTRDFSIRSLADRLGDLSYLIYVFPDRPKDEVFSKYYT
PVLAKAVDGYVKPQIKQVVPEFVNASADAGGSSATYMDQAPSPAVCPQAPYNMYPQN
PDHVLDQDGEFDLDETMDVARHVEELLRRPMDSLDSRLSPPAGLFTSARGSLS

B) STAT 5B

MAVWIQAQQLQGEALHQMQALYGQHFPIEVRHYLSQWIESQAWDSVDLDNPQENIKA
TQLLEGLVQELQKKAEHQVGEDGFLLKIKLGHYATQLQNTYDRCPMELVRCIRHILY
NEQRLVREANNGSSPAGSLADAMSQKHLQINQTFEELRLVTQDTENELKKLQQTQEY
FIIQYQESLRIQAQFGPLAQLSPQERLSRETALQQKQVSLEAWLQREAQTLQQYRVE
LAEKHQKTLQLLRKQQTIILDDELIQWKRRQQLAGNGGPPEGSLDVLQSWCEKLAEI
IWQNRQQIRRAEHLCQQLPIPGPVEEMLAEVNATITDIISALVTSTFIIEKQPPQVL
KTQTKFAATVRLLVGGKLNVHMNPPQVKATIISEQQAKSLLKNENTRNDYSGEILNN
CCVMEYHQATGTLSAHFRNMSLKRIKRSDRRGAESVTEEKFTILFESQFSVGGNELV
FQVKTLSLPVVVIVHGSQDNNATATVLWDNAFAEPGRVPFAVPDKVLWPQLCEALNM
KFKAEVQSNRGLTKENLVFLAQKLFNNSSSHLEDYSGLSVSWSQFNRENLPGRNYTF
WQWFDGVMEVLKKHLKPHWNDGAILGFVNKQQAHDLLINKPDGTFLLRFSDSEIGGI
TIAWKFDSQERMFWNLMPFTTRDFSIRSLADRLGDLNYLIYVFPDRPKDEVYSKYYT
PVPCESATAKAVDGYVKPQIKQVVPEFVNASADAGGGSATYMDQAPSPAVCPQAHYN
MYPQNPDSVLDTDGDFDLEDTMDVARRVEELLGRPMDSQWIPHAQS

Figure 20